Conduct problems, IQ, and household chaos: A longitudinal multi-informant study

Electronic Appendix

Measures

Analyses were based on composite z-scores derived from a data reduction procedure. When relevant, principal components analysis was used to estimate the first principal component for a given set of indicators, to estimate internal consistency of the composite score.

Parent education/IQ. The first principal component, based on principal components analysis (PCA), involving mother education, father education, and mother verbal IQ, explained 55% of the variance (loadings from .59 to .83). Therefore, the three variables were standardized, averaged, and standardized again to yield a parent education/IQ composite z-score.

Home literacy environment. The first principal component based on six variables (mother and father, three assessments each) explained 56% of the variance (loadings .68 to .79). The six variables were averaged and then standardized to yield a home literacy environment composite z-score.

Housing conditions. The two scores (dirtiness of home, and number of risks) were inter-related. The first principal component for four variables (two PVI scores, two raters) explained 64% of the variance (loadings .75 to .84). The variables were standardized, averaged, and standardized again, to yield a housing conditions composite z-score.

Stressful events. The first principal component of four scores (number of events and impact, for mother and father report) explained 57% of the variance (loadings .64 - .83). The scores were standardized, averaged, and standardized again to yield a stressful events composite z-score that represented overall frequency and impact of stressful life events for the household.

Parental warmth and negativity. For parental warmth, a PCA including four variables (observer and self rating, for mother and father positivity and warmth) showed that the first principal component accounted for 42% of the variance (loadings .27 to .91). The range of factor loadings suggested less than ideal internal consistency, but all four variables were retained so that the structure of the parental warmth composite paralleled the structure of the parental negativity composite as described below. The four standardized variables were averaged and standardized again to yield a single parental warmth composite z-score.

For parental negativity, a PCA including four variables (observer and self rating, for mother and father negativity) showed that the first principal component accounted for 42% of the variance (loadings .49 to .73). The four standardized variables were averaged and standardized again to yield a single parental negativity composite z-score.

Child IQ. The first principal component for the three annual assessments of child IQ explained 81% of the variance (loadings .88 to .92). The three scores were averaged, to yield a single 'g' score for each child.

Child conduct problems. A PCA of these various scales across mothers' and fathers' reports over time showed that the first principal component accounted for 54% of

the variance (loadings .61 to .80). Therefore, the scores were standardized, averaged, and standardized again to yield a single child conduct problems composite z-score.

Additional Results: Longitudinal Analyses of Child IQ

We investigated whether child IQ over two years (from wave 1 to 3) would be statistically predicted by chaos from wave 1 to 3, after controlling for other significant family factor predictors. We estimated a hierarchical regression equation predicting wave 3 child IQ separately for the two sub-samples of children; results for sub-sample 1 are presented first, followed by findings for sub-sample 2. In step 1, child IQ at wave 1 was entered, F (1, 180) = 136.83, $p < .001$, adjusted R^2 =.43, wave 1 child IQ β = .66, $p <$ .001. In step 2, the significant family variable predictors from previous analyses of child IQ (see Table 4) were entered; F (2, 178) = 0.29, n.s., parent education/IQ β = .05, n.s., literacy environment β = -.02, n.s. In step 3, household chaos from wave 1 was entered into the equation; F (1, 177) = 7.61, $p < .01$, adjusted R^2 = .45, wave 1 chaos β = -.16, $p <$ .05. In step 4, chaos from wave 3 was entered; F (1, 176) = 0.25, n.s., wave 3 chaos β = -.04, n.s. The equation was estimated again for sub-sample two. In step 1, child IQ at wave 1 was included, F (1, 180) = 183.52, $p < .001$, adjusted R^2 = .50, wave 1 child IQ β = .71, $p < .001$. Other family factors were entered in step 2, F (2, 178) = 2.09, n.s., parental education/IQ β = -.01, n.s., literacy environment β = .11, $p < .10$. In step 3, household chaos from wave 1 was entered into the equation; F (1, 177) = 0.71, n.s., wave 1 chaos β = -.05, n.s. In step 4, chaos from wave 3 was entered; F (1, 176) = 0.06, n.s., wave 3 chaos β = .02, n.s. Overall, there was no evidence to suggest a longitudinal connection between chaos and child IQ operating above and beyond their concurrent association.